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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MCKENZIE, THOMAS C

ART UNIT PAPER NUMBER

1624

DATE MAILED: 06/17/2003

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/514,023

Applicant(s)

GURTLER ET AL.

Examiner

Thomas McKenzie, Ph.D.

Art Unit

1624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 56-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 56-60 and 65-67 is/are rejected.
- 7) ☒ Claim(s) 61-64 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to amendments filed on 3/3/03. Applicant has canceled all pending claims. Claims 56-67 are new. Claims 56-67 are synthesis claims. This is the third action on the merits. The application concerns some ring closing diene metathesis reactions conducted in ionic liquids to prepare cycloalkenyl amines.

Response to Amendment

2. Applicants' new title and abstract overcomes the objections made in point #3 and #4 of the previous office action. Applicants' deletion of the relevant material from the new claims overcomes the indefiniteness rejections made points #6-#8 in the previous office action. Applicants' listing of the claimed substituents in the new claim 56 overcomes the rejection made in point #9. Applicants' correction of the claim dependency in new claim 58 overcomes the rejection made in point #10. Applicants' limitation of the claims to formula (I) overcomes the enablement rejection made in point #12.

Claim Rejections - 35 USC § 112

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. Claims 56-60, 66, and 67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrases "compounds that form transition metal carbenes under the

reaction conditions” and “alkylating agents” in claim 56 remain unduly functional. Applicants are attempting to define the structures of specific chemical compounds used in Applicants’ claimed process. Names, structures, and chemical formulas precisely define organic molecules. Attempting to define structure by function is not proper when the structures can be clearly expressed in terms that are more precise. It is not sufficient to define a chemical structure solely by a chemical property. The skilled process chemist, who would use Applicants’ invention, would not recognize what compounds were intended using this claim language.

The Applicants made no traverse of this rejection.

4. Claim 65 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The ruthenium compound in the upper right side of the four formulas is shown as a +1 charged ion. The laws of chemistry require isolated compounds to be electrically neutral. The specification does not make clear what, if any, negatively charged counter ions are intended. *Ex parte Diamond* 123 USPQ 167, *Ex parte Pedlow* 90 USPQ 395.

In line 21, page 16 this catalyst is pictured with a triflate counter ion. The Examiner suggests adding "TfO⁻" to the formula.

The Applicants made no traverse of this rejection.

5. Claims 56-60, 66, and 67 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for osmium, ruthenium, and molybdenum catalysts, does not reasonably provide enablement for all transition metal carbenes, transition metal carbenes formed under the reaction condition, or alkylated transition metal salts generally. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. As discussed in the previous office action the plain meaning of transition metal is all "3d transition metal ions -- i. e., ions having electrons in the 3d energy state or shell". Applicants' claim 56 includes carbenes of lanthanides, actinides, the trans uranium metals, and the element actinium, with no known stable isotopes. Applicants' claim 56 includes early transition metals like scandium and late transition metals like mercury, not just the osmium, ruthenium, and molybdenum metals from rows VIB and VIII in the middle of the periodic chart.

“The factors to be considered [in making an enablement rejection] have been summarized as the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in that art, the predictability or unpredictability of the art and the breadth of the claims”, *In re*

Rainer, 146 USPQ 218 (1965); *In re Colianni*, 195 USPQ 150, *Ex parte Formal*, 230 USPQ 546. a) Determining if all claimed catalysts would react under Applicants conditions would require synthesis of the catalysts and subjecting it to cyclization with a variety of claimed substrates. The Examiner counts sixty-five different transition metals in his periodic chart. Thus, a large degree of experimentation is required. b) The direction concerning the catalysts is found in lines 15-18, page 3, which merely states Applicants intent to use all transition metals. The passage spanning line 5, page 7 through line 20, page 8 repeats Applicants intent to use all transition metals and teaches that ruthenium and osmium are preferred. c) Working examples 1-9 employs ruthenium only. Working Example 10 uses molybdenum. There are no working examples of use of any of the remaining sixty-three transition metals. d) The nature of the invention is catalyzed chemical synthesis, which involves chemical reactions. e) The state of the art is summarized by Collmann (Principles and Applications of Organotransition Metal Chemistry) in line 6, page 49, "[t]here are some notable differences between chemical properties of elements in the various regions of the transition series". In the last In the third and fourth complete paragraphs on this page Collmann (Principles and Applications of Organotransition Metal Chemistry) contrasts the chemical behavior of metals in the center of the periodic chart, like

Applicants', with those of the left and right hand side. f) The artisan using Applicants invention to prepare the claimed compounds would be a process chemist or pilot plant operator with a BS degree in chemistry and several years of experience. g) The claimed process is catalytic and inherently understood to be unpredictable, *MOBIL OIL CORPORATION v. W.R. GRACE & COMPANY*, 180 USPQ 418, *Merck & Co. v. Olin Mathieson Chemical Corp.*, 253 F.2d 156, 164, 116 USPQ 484, 490 (4th Cir. 1958), *Corona Cord Tire Co. v. Dovan Chemical Corp.*, 276 U.S. 358, 368-369 (1928), *Application of Grant*, 304 F.2d 676, 679, 134 USPQ 248, 250-251 (CCPA 1962); *Rich Products Corp. v. Mitchell Foods, Inc.*, 357 F.2d 176, 181, 148 USPQ 522, 525-526 (2d Cir. 1966), cert. denied 385 U.S. 821, 151 USPQ 757 (1966); *Ling-Temco-Vought, Inc. v. Kollsman Instrument Corp.*, 372 F.2d 263, 268, 152 USPQ 446, 450-451 (2d Cir. 1967); *Georgia-Pacific Corp. v. United States Plywood Corp.*, 258 F.2d 124, 132-133, 118 USPQ 122, 128-129.. h) The breadth of the claims includes all of the thousands of compounds of formula I and IA as well as the presently unknown list of catalysts embraced by claim 56.

MPEP 2164.01(a) states, "A conclusion of lack of enablement means that, based on the evidence regarding each of the above factors, the specification, at the time the application was filed, would not have taught one skilled in the art how to

make and/or use the full scope of the claimed invention without undue experimentation. *In re Wright*, 999 F.2d 1557,1562, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993).” That conclusion is clearly justified here. Thus, undue experimentation will be required to use Applicants' invention.

The Applicants made no traverse of this rejection.

Allowable Subject Matter

6. Claims 61-64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 65 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: Applicants' claims are patentable over claims 1-8 of Gurtler ('925) who claims cyclization of dienes of formula (I) with the dichlororuthenium catalyst of the present claim 65. However, the reference does not teach or make obvious the ionic liquid solvent of the present claims.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.**

9. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Please direct any inquiry concerning this communication or earlier communications from the Examiner to Thomas C McKenzie, Ph. D. whose telephone number is (703) 308-9806. The FAX number for after final amendments is (703) 872-9307. The Examiner is available from 8:30 to 5:30, Monday through Friday. If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mukund Shah can be reached on (703) 308-4716. Please direct general inquiries or any inquiry relating to the status of this application to the receptionist whose telephone number is (703) 308-1235.

Mukund Shah

Mukund Shah
Supervisory Patent Examiner
Art Unit 1624

TCMcK
June 11, 2003

